NOTES

THE CRUX OF OUR SHIPPING PROBLEM

Careful students of American shipping have been accustomed to start discussions of the subject by asking, Is it economic for the United States to have a large merchant fleet? Today we have 10.6 million gross tons of sea-going steel ships,[1] are second only to the 18.1 million tons of the United Kingdom, and have over three times as much tonnage as Japan or France, which stand third and fourth on the list.[2] The important question now is, Can we keep our ships? which really means, Are we willing to pay the costs? Our ability to maintain a large merchant marine depends upon a variety of political and economic factors, many of international scope, but few questions will be asked with better logic or more insistence than, (1) How profitable has shipping been in the past? and, (2) How profitable is it likely to be in the next few years, during which a definite policy with reference to our merchant marine should be formulated? It is the purpose of this article to attempt an answer to these questions.

I. HOW PROFITABLE HAS SHIPPING BEEN IN THE PAST?

Shipping is a hazardous business. In the quaint language of marine insurance policies it is beset by "adventures and perils . . . . of the sea, men-of-war, fires, enemies, pirates, rovers, thieves, jettisons, letters of mart and countermart, reprisals, takings at sea, arrests, restraints and detainments of all kings, princes or people of what nation, condition or quality whatsoever, barratry of the master and mariners and all other perils, losses and misfortunes that have or shall come to the hurt, detriment or damage of the said vessel." On the basis of Adam Smith's dictum, the return on such a venture should be high, but unfortunately this is not the case.

For the purpose of clarity, three kinds of ships will be distinguished: (1) cargo vessels, which normally carry over half the total weight of overseas shipments and which go indiscriminately into all parts of the world in any trade that promises profit; (2) combination passenger and

[1] *Report of Commissioner of Navigation*, February 1, 1921.

[2] *Lloyd's Register*, June 30, 1920.

freight tonnage, which is employed uniformly in regular services; and (3) tankers, the carriers of oil in bulk.

1. The problem of our merchant marine hinges largely on the government-owned tonnage, most of which belongs to the first class. The Shipping Board owns 6.3 million tons of ordinary freighters,[1] and on these an average return of about 5 per cent is all that can logically be expected. In the past this yield was not sufficient to attract much American capital to marine enterprise; witness the fact that in 1914 only 725,000 gross tons were registered under our flag for foreign trade, and at least half of that so registered was in the coastwise or semi-protected trade of the Gulf and Caribbean. It remains to be seen if the return is sufficient to keep American capital invested in maritime enterprises even with collateral and intangible advantages added.

Since 1904 *Fairplay*, the British shipping magazine, has published annually a compilation made from the reports of over fifty cargo-shipping companies, which owned each year an average of 1.7 million gross tons of steamers, or over twice as much as was registered for foreign trade under our flag in 1914 and nearly three times that which was actually engaged in essentially foreign trade. While not all the same companies were included each year, the figures may be taken as representative of the experience of British cargo-steamship companies. There is the presumption that British companies were as profitably operated as those of any other country, and consequently the results can be taken as an index of the earnings of all cargo boats.

In the ten years ending with 1913, dividends averaging 4.80 per cent were distributed to the stockholders, and 4.34 per cent per annum of the original cost of the ships was set aside for depreciation.[2] Depreciation, of course, is a charge that can be put off for several years, though not indefinitely, and it will be noticed that an insufficient amount was allocated for this purpose until 1912 and 1913, when over twice as much was laid by for depreciation as was paid out to the shareholders.

It is generally agreed that 5 per cent of the original cost of a vessel should be set aside for wear and tear and obsolescence. The latter in particular is likely to be at a high rate in the near future because of the rapid development of the Diesel-engined carriers. If 5 per cent had been allocated to this fund, the average dividends of the lines would have been reduced to 3.55 per cent, assuming that other distributions were the same.

[1] *Report of Commissioner of Navigation*, February 1, 1921.

[2] *Fairplay*, January 6, 1921.

AVERAGE DIVIDENDS PAID AND DEPRECIATION SET ASIDE BY REPRESENTATIVE BRITISH CARGO-SHIPPING COMPANIES 1904–13

Year	Paid-up Capital. Thousands of Pounds	Dividends Paid. Thousands of Pounds	Percentage of Dividends	Cost of Steamers. Thousands of Pounds	Depreciation Written Off. Thousands of Pounds	Percentage of Depreciation
1904	7,594	277	3.64	12,455	216	1.73
1905	8,577	286	3.33	14,818	239	1.61
1906	8,082	327	4.05	14,639	349	2.43
1907	9,167	383	4.17	16,654	413	2.48
1908	9,622	335	3.48	17,523	394	2.25
1909	9,517	180	1.89	16,758	189	1.13
1910	9,458	218	2.30	17,284	290	1.68
1911	9,884	370	3.73	18,862	306	2.68
1912	10,560	721	6.82	20,221	1,464	7.24
1913	10,964	1,378	12.56	21,473	3,345	15.58
Average	9,343	448	4.80	17,069	741	4.34

While 4.78 per cent was being paid to the investors in the companies, not much more was earned on the total capital tied up in the business. During the ten years a return of 6.05 per cent was made on the paid-up capital, debentures, and loans. If 5 per cent had been allocated for depreciation the average earnings would have been reduced to 5.25 per cent.

AVERAGE EARNINGS AND DEPRECIATION OF REPRESENTATIVE BRITISH CARGO-SHIPPING COMPANIES 1904–13

Year	Capital, Debentures, and Loans. Thousands of Pounds	Earnings after Depreciation. Thousands of Pounds	Percentage of Earnings	Earnings after 5 per cent Depreciation. Thousands of Pounds	Percentage of Earnings
1904	10,751	424	3.94	18	0.17
1905	12,331	525	4.26	22	0.18
1906	11,751	631	5.37	248	2.11
1907	13,616	666	4.89	247	1.81
1908	14,032	752	5.36	269	1.92
1909	14,502	459	3.17	−190	−1.31
1910	15,007	552	3.68	− 22	−0.15
1911	16,145	966	5.98	528	3.27
1912	16,618	1,406	8.46	1,858	11.18
1913	16,455	2,161	13.13	4,432	26.93
Average	14,121	854	6.05	741	5.25

While some criticism may be made of the foregoing figures, they are thought to be on a basis sufficiently wide and of enough accuracy to

justify the conclusion that in ordinary times cargo shipping yields a return of about 5 per cent. The ten years selected include the end of the depression that followed the boom period of the Boer War, the bad years after the panic of 1907, and two conspicuously good years when rates were higher than they had been since 1891.

2. Such detailed information cannot be obtained for passenger ships, but enough data exist to warrant the conclusion that passenger liners earn slightly more than straight cargo ships. This is reasonable because of a more diversified business and because such companies are generally protected from cutthroat competition by conference agreements. In the eight years ending with 1913, statistics compiled by *Fairplay*[1] from the annual reports of over twenty British passenger companies owning

AVERAGE DIVIDENDS PAID BY REPRESENTATIVE BRITISH PASSENGER-STEAMSHIP COMPANIES 1906–13

Year	Paid-up Capital. Thousands of Pounds	Dividends Paid. Thousands of Pounds	Percentage of Dividend
1906	20,340	909	4.47
1907	18,816	856	4.55
1908	20,475	934	4.56
1909	21,088	865	4.10
1910	21,211	1,030	4.86
1911	22,612	1,372	6.07
1912	22,165	1,727	7.79
1913	27,067	2,808	10.37
Average	21,721	1,313	6.04

each year an average of 3.9 million gross tons show that 6.0 per cent in dividends was distributed on the paid-up capital. Some of the more important lines included are the Cunard SS. Co., the Oceanic Steam Navigation Co. (the White Star Line), the British India Steam Navigation Co., the P. and O., the Royal Mail Steam Packet Co., and the Union Castle Mail SS. Co. No evidence has been found that any of the companies included are grossly overcapitalized, the P. and O., now owning and controlling nearly two million gross tons, being one of the most conservatively capitalized shipping companies in the world. The figures may be taken as characteristic of the experience not only of British liner companies but of those of all countries.

[1] January 6, 1921.

Our merchant marine contains only 1.1 million gross tons of passenger vessels. The 323,000 gross tons of liners seized from Germany and Austria comprise the bulk of our real liners, and a number of these are nearly past usefulness. The "Leviathan," 54,281 gross tons, a mere shell stripped of all fittings, is rusting at a Hoboken dock, and the "Von Steuben," 14,908 gross tons, the former "Kronprinz Wilhelm" which, as an auxiliary cruiser, sank 14 allied ships before finally slipping into Newport News in April, 1915, is tied up in Brooklyn. The "Manchuria" and "Mongolia," 13,638 gross tons each, are the two largest American-built liners plying the Atlantic. The historic "St. Louis," after having been gutted by fire, has been sold to foreigners, and the "New York," "St. Paul," and "Philadelphia," which for years were the only American passenger vessels crossing the Atlantic regularly, have been withdrawn from operation and will doubtless descend to the status of immigrant ships in the Near East service. Of more importance for the future are the twenty-three combination passenger and cargo liners, totaling 300,000 gross tons, which the Shipping Board is having built. Some of these have already been delivered, and each of them will be a valuable unit in our merchant marine. Apart from these ships, which are fairly well known, the remainder of our passenger tonnage is largely small vessels trading with the West Indies and Central America in trades that are essentially coastwise. The little passenger tonnage that flies the American flag is in a slightly better position than cargo tonnage, yielding a higher return from the pecuniary and psychological viewpoints, but its position is by no means secure. Certain individual companies have, of course, made fortunes and others perhaps will.

3. Tanker tonnage was a small part of the total American or world tonnage before 1914 and is treated here because of the increasingly important part it seems destined to play. In the summer of 1914 the United States had only 200,000 gross tons of steam tank ships out of a world-total of 1.4 million tons; on June 30, 1920, 1.4 million tons were flying the American flag, or 200,000 tons more than were under British registry, and 47 per cent of this kind of tonnage afloat. By February 1, 1921, our oil-carrying tonnage had increased to 1.8 million tons, of which 565,000 tons belonged to the Shipping Board. This large growth in tonnage of American oil carriers is really the history of our progressive dependence upon Mexico for crude oil; in 1912 we imported 3.1 million barrels from that country, in 1920, 105.6 million barrels.

In general, tankers belong to large companies and are an integral part of the transporting, refining, and marketing of oil. This was particularly true before 1919, and consequently it is impossible to determine the rate of return earned by them.

The United States has such a dominant position in the oil business—we produce two-thirds of the world's oil and consume nearly three-fourths—and tankers are so essential to the enterprise that there is little doubt about our tankers being profitable. The fundamental fact to be borne in mind when looking ahead is that the sources of oil supply, outside the United States, i.e., Mexico, the Dutch East Indies, Persia, etc., are all distant *overseas* from the consuming centers, which means more tankers as consumption increases and our own production, in particular, continues to satisfy a decreasing portion of our demand.

II. HOW PROFITABLE WILL SHIPPING BE IN THE FUTURE?

The outstanding facts on which to base a prediction are (1) that the steam tonnage afloat on the first of the year was 56.8 million tons, or 13.7 million tons more than in 1913, and (2) that the amount of cargo moving is only two-thirds as much as in 1913.

1. Of the 13.7 million tons increase, approximately 1.7 million tons are tankers. There is evidence to support the view that the quantity of passenger tonnage is less than before the war, consequently at least 12.0 million gross tons of cargo ships in excess of the amount in operation in 1913 are now competing for the diminished trade of the world.

2. But what of the "normal increase" in tonnage? The American Exchange National Bank in the March 1 issue of its bulletin says:

> Roughly, at the outbreak of the war there was a world tonnage of ocean-going shipping of about 50 million gross tons. At the end of 1920 the world tonnage aggregated about 60 million gross tons. The tonnage built in 1913 approximated 3 million gross tons. . . . . By using the new construction in 1913 as the annual rate of additions to the shipping of the world, the seven years that lie between 1913 and 1920 ought to have added something over 21 million tons, bringing the world's total to 71 million instead of 60 million. Deduct one million tons a year for ships lost and scrapped and the total still falls short of the tonnage that would have resulted from the normal rate of increase.

In the name of accuracy and straight thinking, *pish posh*, as H. L. Mencken might say. This naïve theory overlooks the point that the so-called normal increase before the war resulted from an increase in

the amount of cargo moving, that ships were not built, as children's block houses, merely for the pleasure of it. But the overseas shipments of cargo today are not more than two-thirds those of 1913, as has been proved by the Supreme Economic Council, which reduced the exports and imports of nineteen leading countries to a weight basis.[1] The countries included are all of Western Europe except the Central Powers and the Balkans, the United States, Canada, Brazil, Argentina, the Union of South Africa, New Zealand, British India, Siam, and Japan, certainly representative of the trade of the world.

IMPORTS AND EXPORTS OF NINETEEN LEADING COUNTRIES—BY WEIGHT 1913, 1919, AND 1920

Quarterly Average	Imports. Millions of Tons	Percentage	Exports. Millions of Tons	Percentage
1913	74.0	100	72.1	100
1919 First	34.8	47	32.5	45
Second	42.1	57	42.0	58
Third	49.8	67	45.1	63
Fourth	49.1	66	43.4	60
1920 First	49.7	67	44.5	62

Later figures are not available, but the trade slump of the last twelve months leads one to consider as really conservative the statement that only two-thirds as much cargo is moving as in 1913. On this basis, assuming that operating efficiency approaches that of the pre-war period, the potential surplus of tonnage is more than 12 or 13 million gross tons, and Gordon Robinson's estimate does not seem bizarre.

There are other minor considerations. Someone may ask, Are not some cargoes carried greater distances as a result of trade derangements, and does it not take more tonnage to do the same amount of work? With the exception of exports of American coal and Continental imports of wheat, which formerly came from Russia, no bulky commodity travels an appreciably longer sea route. Other questions as to percentages of loading, more and longer trips in ballast, and the like might alter but cannot destroy the substantial accuracy of the statement that there is 25 per cent more tonnage than in 1913 to do two-thirds the amount of work.

The reaction of rates on bulk cargoes bears this out. The coal rate to the West Coast of Italy is around $5.75 a ton, as compared with $26.50 at the beginning of last year, and an average of $4.86 in 1914.

[1] *The Statist*, London, September 11, 1920.

Coal from Cardiff to Genoa moves today for 18 shillings a ton as against 18 shillings in 1914 and 14 shillings 6 pence in 1912. Grain from Buenos Aires to the United Kingdom is now carried for 30 shillings a ton as compared with 30 shillings 6 pence in 1913 and 33 shillings in 1912. These rates are so low that only the most economical ships can meet operating expenses. Any appreciable increase in the demand for cargo space brings into the market enough of the idle tonnage to keep rates down to an unremunerative level, and this is likely to be the case until the amount of cargo moving overseas increases greatly. On account of the prostration of Europe and the world-wide business depression, several years will doubtless elapse before any great increase in cargo shipments takes place.

While charter rates are practically on a pre-war basis, operating expenses are now nearly three times those of 1913. *Shipbuilding and Shipping Record*[1] states that operating expenses of British cargo steamers in 1920 were 180 per cent higher than in 1913, the statement being based on the records of a large number of actual voyages. While the price of bunker coal has fallen considerably and is likely to recede further, other items will probably decrease very slowly. With pre-war charter rates and tripled operating expenses, one can appreciate why owners tie up their boats.

It seems impossible to escape the conclusion that cargo shipping is facing some of the leanest years ever known. Heretofore a surplus of 2 million gross tons has been thought enormous, but with seven or eight times that amount in a period of depression the future for cargo shipping is not bright.

III. CONCLUSIONS

Our shipping problems cannot be solved by press agents who shout in two column leads that Old Glory is again spread to the breeze in all the important ports of the world, for the appearance of our flag in distant harbors, like indiscreet peach blossoms in the spring, may be ephemeral. Nor can the issue be settled by legislative fiat, Congress inevitably calling to mind the figure of Stephen Leacock's comic horseman who rode off in all directions at the same time. The ultimate decision will be made by the business sense of the country and will doubtless be worked out through individual enterprise, perhaps with government assistance. And the facts that cannot be neglected are, first, that shipping, which ordinarily yields a small direct return, will

[1] February 24, 1920.

barely make expenses during the next few years, and, second, that it costs more to operate vessels under the American flag than under other registries. The latter statement is no hasty generalization, but is based on the experience of one of the largest American companies which operates ships under several flags.

It is not the purpose to go into the complications of the problem but rather to refer to the biblical king who, before going to war, sat down and calculated the cost. It is a question of the game being worth the candle, of whether the collateral and intangible benefits will compensate for the low direct financial return, and, if not, of whether we are willing to support subsidies.

One is pessimistic of the future of our shipping mainly because of popular misconceptions and the apparent belief of a democracy that we can have anything, even a large merchant fleet, merely by talking about it. In such a situation it is helpful to state the problem, the solution of which is far from hopeless. Certain specific remedies will be discussed elsewhere.

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SCIENTIFIC METHOD IN JOB ANALYSIS

One of the most popular subjects now engaging the attention of industrial executives is job analysis, which is generally conceived as a process of dissecting a job and describing its component elements. An examination of the usual factory procedure shows that this dissection is usually accomplished by means of rough observation on the part of the employment manager in consultation with foreman, master mechanic, or expert operator. The "unit operations" thus revealed are then written up in a form called the job specification. These attempts at analysis yield results of some value, but they fail to bring to industry all the benefits potential in analysis because they are too rough and too nearly matters of rule of thumb.

Two improvements in particular should be adopted. First, the observations should be made not merely with the naked eye but also with microscopic minuteness. Granted that rough and ready divisions are adequate for certain situations, still to stop with them would be as fallacious as to confine the study of the human body to the technique of gross anatomy. Just as the science of human anatomy in the course of its development was obliged to adopt the microscope and to make